



results of BLAST

CD

BLASTP 2.2.6 [Apr-09-2003]**Reference:**

Altschul, Stephen F., Thomas L. Madden, Alejandro A. Schäffer, Jinghui Zhang, Zheng Zhang, Webb Miller, and David J. Lipman (1997), "Gapped BLAST and PSI-BLAST: a new generation of protein database search programs", Nucleic Acids Res. 25:3389-3402.

RID: 1054223627-02841-5673

Query=

(20 letters)

Database: All non-redundant GenBank CDS
translations+PDB+SwissProt+PIR+PRF

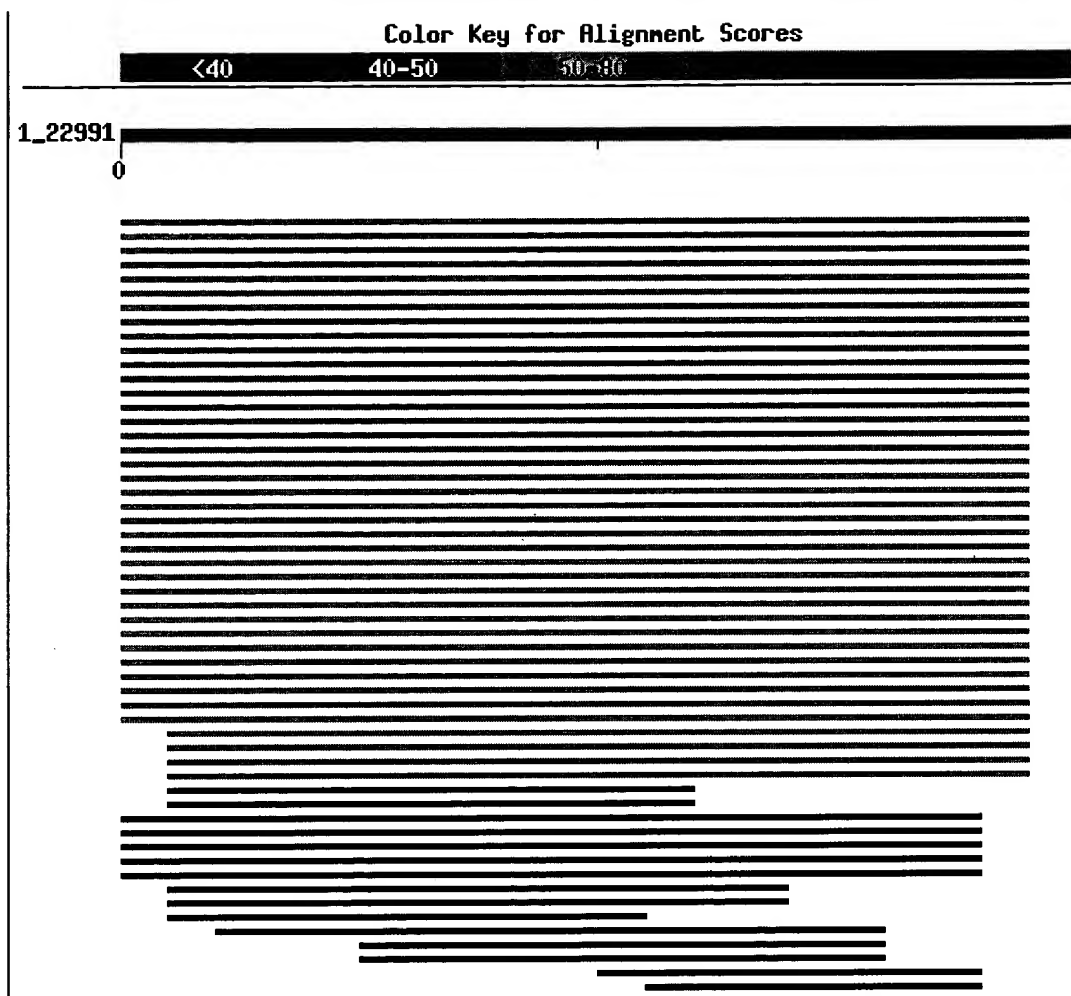
1,438,044 sequences; 462,300,935 total letters

If you have any problems or questions with the results of this search
please refer to the [BLAST FAQs](#)

[Taxonomy reports](#)

Distribution of 125 Blast Hits on the Query Sequence

Mouse-over to show defline and scores. Click to show alignments



Sequences producing significant alignments:	Score (bits)	E Value
<u>gi 7669518 ref NP_039253.1 </u> neuregulin 1 isoform SMDF; here...	<u>73</u>	5e-13
<u>gi 11066084 gb AAG28450.1 AF194996_1</u> glial growth factor GG...	<u>73</u>	5e-13
<u>gi 14043365 gb AAH07675.1 AAH07675</u> neuregulin 1 [Homo sapie...	<u>73</u>	5e-13
<u>gi 7669524 ref NP_039256.1 </u> neuregulin 1 isoform GGF2; here...	<u>73</u>	5e-13
<u>gi 22004078 tpg DAA00047.1 </u> TPA: neuregulin 1 isoform GGF2 ...	<u>73</u>	5e-13
<u>gi 26339516 dbj BAC33429.1 </u> unnamed protein product [Mus mu...	<u>73</u>	5e-13
<u>gi 11066086 gb AAG28451.1 AF194997_1</u> glial growth factor GG...	<u>73</u>	5e-13
<u>gi 7669514 ref NP_039251.1 </u> neuregulin 1 isoform HRG-beta2;...	<u>73</u>	5e-13
<u>gi 408407 gb AAA19953.1 </u> neu differentiation factor	<u>73</u>	5e-13
<u>gi 29373075 gb AAO72524.1 </u> neuregulin 1-beta 1; NRG1-beta1 ...	<u>73</u>	5e-13
<u>gi 11066048 gb AAG28432.1 AF194443_1</u> SMDF neuregulin beta 3...	<u>73</u>	5e-13
<u>gi 482989 pir B43273</u> heregulin, splice form beta 1 - human	<u>73</u>	5e-13
<u>gi 2143869 pir A56210</u> neu differentiation factor - rat (fr...	<u>73</u>	5e-13
<u>gi 11066038 gb AAG28427.1 AF194438_1</u> SMDF neuregulin beta 1...	<u>73</u>	5e-13
<u>gi 11066050 gb AAG28433.1 AF194993_1</u> glial growth factor be...	<u>73</u>	5e-13
<u>gi 2406644 gb AAC51756.1 </u> gamma-heregulin [Homo sapiens]	<u>73</u>	5e-13
<u>gi 11066082 gb AAG28449.1 AF194995_1</u> glial growth factor GG...	<u>73</u>	5e-13
<u>gi 4929183 gb AAD33893.1 AF142632_1</u> cysteine-rich domain ne...	<u>73</u>	5e-13

gi 27806513 ref NP_776553.1	neuregulin 1 [Bos taurus]	>gi ...	73	5e-13	L
gi 9297000 sp P43322 NRG1 RAT	Pro-neuregulin-1 precursor (P...		73	5e-13	L
gi 7669516 ref NP_039252.1	neuregulin 1 isoform HRG-beta3;...		73	5e-13	L
gi 483138 pir C43273	heregulin precursor, splice form beta...		73	5e-13	L
gi 408391 gb AAA19945.1	neu differentiation factor		73	5e-13	L
gi 22004072 tpg DAA00041.1	TPA: neuregulin 1 isoform HRG-b...		73	5e-13	L
gi 349729 gb AAA72403.1	heregulin beta-1		73	5e-13	L
gi 7669522 ref NP_039255.1	neuregulin 1 isoform GGF; hereg...		73	5e-13	L
gi 30584177 gb AAP36337.1	Homo sapiens neuregulin 1 [synth...		73	5e-13	L
gi 408409 gb AAA19954.1	neu differentiation factor		73	5e-13	L
gi 11066044 gb AAG28430.1 AF194441.1	SMDF neuregulin beta 2...		73	5e-13	L
gi 7459696 pir I38408	neu differentiation factor - human (...)		73	5e-13	L
gi 13928798 ref NP_113776.1	neuregulin 1 [Rattus norvegicu...		73	5e-13	L
gi 28483768 ref XP_134101.2	RIKEN cDNA D230005F13 gene [Mu...		73	5e-13	L
gi 7669512 ref NP_039250.1	neuregulin 1 isoform HRG-beta1;...		73	5e-13	L
gi 408393 gb AAA19946.1	neu differentiation factor		73	5e-13	L
gi 11066046 gb AAG28431.1 AF194442.1	SMDF neuregulin beta 4...		73	5e-13	L
gi 22004073 tpg DAA00042.1	TPA: neuregulin 1 isoform HRG-b...		73	5e-13	L
gi 2961137 gb AAC05671.1	neuregulin beta-2a [Gallus gallus]		70	4e-12	L
gi 9297019 sp Q05199 NRG1 CHICK	Pro-neuregulin-1 precursor ...		70	4e-12	L
gi 2961139 gb AAC05672.1	neuregulin beta-2b [Gallus gallus]		70	4e-12	L
gi 2961135 gb AAC05670.1	neuregulin beta-1a [Gallus gallus]		70	4e-12	L
gi 2589172 gb AAB83956.1	mucin Muc3 [Rattus norvegicus]		37	0.036	L
gi 111979 pir A39321	mucin - rat (fragment) >gi 205546 gb ...		37	0.036	L
gi 9789757 sp P56974 NRG2 MOUSE	Pro-neuregulin-2 precursor ...		36	0.065	L
gi 7669532 ref NP_053586.1	neuregulin 2 isoform 4; neural-...		36	0.065	L
gi 7669528 ref NP_053584.1	neuregulin 2 isoform 2; neural-...		36	0.065	L
gi 7459670 pir PC4415	ErbB kinase activator beta, brain an...		36	0.065	L
gi 29373063 gb AAO72523.1	neuregulin 2-beta; NRG2-beta [Mu...		36	0.065	L
gi 9055270 ref NP_061027.1	low density lipoprotein-related...		33	0.38	L
gi 17298318 gb AAL38110.1	candidate tumor suppressor prote...		33	0.38	L
gi 7459690 pir T09059	notch4 - mouse >gi 2564947 gb AAB820...		33	0.51	L
gi 6754874 ref NP_035059.1	Notch gene homolog 4; Notch gen...		33	0.51	L
gi 1401160 gb AAC52630.1	Notch4		33	0.51	L
gi 27704488 ref XP_215341.1	similar to Notch gene homolog ...		33	0.51	L
gi 27707180 ref XP_231213.1	similar to low density lipopro...		32	1.2	L
gi 26330916 dbj BAC29188.1	unnamed protein product [Mus mu...		32	1.2	L
gi 2583092 gb AAC53572.1	mucin glycoprotein MUC3 [Mus musc...		32	1.2	L
gi 16519539 ref NP_443737.1	low density lipoprotein-relate...		32	1.2	L
gi 15929752 gb AAH15298.1	Muc3 protein [Mus musculus]		32	1.2	L
gi 7434825 pir T13810	DNA-directed DNA polymerase (EC 2.7....		31	1.7	L
gi 7447799 pir T13808	DNA-directed DNA polymerase (EC 2.7....		31	1.7	L
gi 19527699 gb AAL89964.1	AT02241p [Drosophila melanogaster]		31	1.7	L
gi 17136648 ref NP_476821.1	tamas CG8987-PA [Drosophila me...		31	1.7	L
gi 12231943 gb AAG49316.1 AF315554.1	notch-like transmembra...		30	3.0	L
gi 12231945 gb AAG49317.1 AF315555.1	notch-like transmembra...		30	3.0	L
gi 27692559 ref XP_223174.1	similar to ATP-binding cassett...		30	4.0	L
gi 17509113 ref NP_491270.1	EGF-like protein [Caenorhabdit...		29	7.2	L
gi 7508146 pir T29764	hypothetical protein T21E3.3 - Caeno...		29	7.2	L
gi 4321121 gb AAB17010.2	Notch-3 homolog [Carassius auratus]		29	9.6	L
gi 25148980 ref NP_741938.1	EATing: abnormal pharyngeal pu...		28	13	L

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Alignments

Get selected sequences	Select all	Deselect all
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>gi|7669518|ref|NP_039253.1|      neuregulin 1 isoform SMDF; heregulin, alpha (45kD,
      p185-activator); glial growth factor; neu
      differentiation factor; sensory and motor neuron derived
      factor [Homo sapiens]
gi|9297048|sp|Q15491|SMDF HUMAN    Neuregulin-1, sensory and motor neuron-derived fact
gi|1082779|pir|A56943              sensory/motor neuron-derived factor - human
gi|862423|gb|AAC41764.1|          sensory and motor neuron-derived factor
gi|22004075|tpg|DAA00044.1|      TPA: neuregulin 1 isoform SMDF [Homo sapiens]
      Length = 296

```

Score = 72.7 bits (164), Expect = 5e-13
Identities = 20/20 (100%), Positives = 20/20 (100%)


Query: 1 KCPNEFTGDRCQNYVMASFY 20
KCPNEFTGDRCQNYVMASFY
Sbjct: 266 KCPNEFTGDRCQNYVMASFY 285

>gi|11066084|gb|AAG28450.1|AF194996.1
 Length = 323

Score = 72.7 bits (164), Expect = 5e-13


Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 KCPNEFTGDRQCQNYVMASFY 20
KCPNEFTGDRQCQNYVMASFY
Sbjct: 293 KCPNEFTGDRQCQNYVMASFY 312

 >gi|14043365|gb|AAH07675.1|AAH07675 neuregulin 1 [Homo sapiens]
gi|30583617|gb|AAP36053.1| neuregulin 1 [Homo sapiens]
Length = 296


Score = 72.7 bits (164), Expect = 5e-13
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 KCPNEFTGDRQCQNYVMASFY 20
KCPNEFTGDRQCQNYVMASFY
Sbjct: 266 KCPNEFTGDRQCQNYVMASFY 285

 >gi|7669524|ref|NP_039256.1| neuregulin 1 isoform GGF2; heregulin, alpha (45kD,
p185-activator); glial growth factor; neu
differentiation factor; sensory and motor neuron derived
factor [Homo sapiens]
gi|422837|pir|S32357 glial growth factor - human
gi|292048|gb|AAB59622.1| recombinant glial growth factor 2
gi|445841|prf|1910316A glial growth factor
Length = 422


Score = 72.7 bits (164), Expect = 5e-13
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 KCPNEFTGDRQCQNYVMASFY 20
KCPNEFTGDRQCQNYVMASFY
Sbjct: 392 KCPNEFTGDRQCQNYVMASFY 411

 >gi|22004078|tpg|DAA00047.1| TPA: neuregulin 1 isoform GGF2 [Homo sapiens]
Length = 422


Score = 72.7 bits (164), Expect = 5e-13
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 KCPNEFTGDRQCQNYVMASFY 20
KCPNEFTGDRQCQNYVMASFY
Sbjct: 392 KCPNEFTGDRQCQNYVMASFY 411

 >gi|26339516|dbj|BAC33429.1| unnamed protein product [Mus musculus]
Length = 296

Score = 72.7 bits (164), Expect = 5e-13
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 KCPNEFTGDRQCQNYVMASFY 20
KCPNEFTGDRQCQNYVMASFY
Sbjct: 266 KCPNEFTGDRQCQNYVMASFY 285

 >gi|11066086|gb|AAG28451.1|AF194997.1 glial growth factor GGF beta 4 [Rattus norvegicus]
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Score = 72.7 bits (164), Expect = 5e-13
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 KCPNEFTGDRQCQNYVMASFY 20
KCPNEFTGDRQCQNYVMASFY
Sbjct: 293 KCPNEFTGDRQCQNYVMASFY 312

☐ >gi|7669514|ref|NP_039251.1| neuregulin 1 isoform HRG-beta2; heregulin, alpha (4
p185-activator); glial growth factor; neu
differentiation factor; sensory and motor neuron derived
factor [Homo sapiens]
gi|183997|gb|AAA58640.1| heregulin-beta2
Length = 637

Score = 72.7 bits (164), Expect = 5e-13
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 KCPNEFTGDRQCQNYVMASFY 20
KCPNEFTGDRQCQNYVMASFY
Sbjct: 211 KCPNEFTGDRQCQNYVMASFY 230

☐ >gi|408407|gb|AAA19953.1| neu differentiation factor
Length = 552

Score = 72.7 bits (164), Expect = 5e-13
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 KCPNEFTGDRQCQNYVMASFY 20
KCPNEFTGDRQCQNYVMASFY
Sbjct: 118 KCPNEFTGDRQCQNYVMASFY 137

☐ >gi|29373075|gb|AA072524.1| neuregulin 1-beta 1; NRG1-beta1 [Mus musculus]
Length = 76

Score = 72.7 bits (164), Expect = 5e-13
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 KCPNEFTGDRQCQNYVMASFY 20
KCPNEFTGDRQCQNYVMASFY
Sbjct: 44 KCPNEFTGDRQCQNYVMASFY 63

☐ >gi|11066048|gb|AAG28432.1|AF194443.1 SMDF neuregulin beta 3 [Rattus norvegicus]
Length = 256

Score = 72.7 bits (164), Expect = 5e-13
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 KCPNEFTGDRQCQNYVMASFY 20
KCPNEFTGDRQCQNYVMASFY
Sbjct: 226 KCPNEFTGDRQCQNYVMASFY 245

☐ >gi|482989|pir|B43273 heregulin, splice form beta 1 - human
Length = 645

Score = 72.7 bits (164), Expect = 5e-13
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 KCPNEFTGDRQCQNYVMASFY 20
KCPNEFTGDRQCQNYVMASFY
Sbjct: 211 KCPNEFTGDRQCQNYVMASFY 230

☐ >gi|2143869|pir|A56210 neu differentiation factor - rat (fragment)
gi|408381|gb|AAA19940.1| neu differentiation factor
Length = 230

Score = 72.7 bits (164), Expect = 5e-13
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 KCPNEFTGDRQCQNYVMASFY 20

KCPNEFTGDRQCQNYVMASFY

Sbjct: 200 KCPNEFTGDRQCQNYVMASFY 219

☐ >gi|11066038|gb|AAG28427.1|AF194438.1 SMDF neuregulin beta 1a [Rattus norvegicus]
Length = 700

Score = 72.7 bits (164), Expect = 5e-13
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 KCPNEFTGDRQCQNYVMASFY 20
KCPNEFTGDRQCQNYVMASFY
Sbjct: 267 KCPNEFTGDRQCQNYVMASFY 286

☐ >gi|11066050|gb|AAG28433.1|AF194993.1 glial growth factor beta 1a [Rattus norvegicus]
Length = 782

Score = 72.7 bits (164), Expect = 5e-13
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 KCPNEFTGDRQCQNYVMASFY 20
KCPNEFTGDRQCQNYVMASFY
Sbjct: 349 KCPNEFTGDRQCQNYVMASFY 368

☐ >gi|2406644|gb|AAC51756.1| gamma-hereregulin [Homo sapiens]
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Score = 72.7 bits (164), Expect = 5e-13
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 KCPNEFTGDRQCQNYVMASFY 20
KCPNEFTGDRQCQNYVMASFY
Sbjct: 738 KCPNEFTGDRQCQNYVMASFY 757

☐ >gi|11066082|gb|AAG28449.1|AF194995.1 glial growth factor GGF beta 2 [Rattus norvegicus]
Length = 317

Score = 72.7 bits (164), Expect = 5e-13
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 KCPNEFTGDRQCQNYVMASFY 20
KCPNEFTGDRQCQNYVMASFY
Sbjct: 293 KCPNEFTGDRQCQNYVMASFY 312

☐ >gi|4929183|gb|AAD33893.1|AF142632.1 cysteine-rich domain neuregulin-1 [Xenopus laevis]
Length = 688

Score = 72.7 bits (164), Expect = 5e-13
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 KCPNEFTGDRQCQNYVMASFY 20
KCPNEFTGDRQCQNYVMASFY
Sbjct: 243 KCPNEFTGDRQCQNYVMASFY 262

☐ >gi|27806513|ref|NP_776553.1| neuregulin 1 [Bos taurus]
gi|7459664|pir|S32359 glial growth factor - bovine
gi|289414|gb|AAA30540.1| glial growth factor
gi|445843|prf|P1910316C glial growth factor
Length = 241

Score = 72.7 bits (164), Expect = 5e-13
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 KCPNEFTGDRQCQNYVMASFY 20
 KCPNEFTGDRQCQNYVMASFY
 Sbjct: 211 KCPNEFTGDRQCQNYVMASFY 230

>gi|9297000|sp|P43322|NRG1_RAT Pro-neuregulin-1 precursor (Pro-NRG1) [Contains: Ne
 differentiation factor) (Heregulin) (HRG) (Acetylcholine
 receptor inducing activity) (ARIA) (Sensory and motor
 neuron-derived factor) (Glial growth factor)]
gi|7459673|pir|I61722 neu differentiation factor - rat
gi|408395|gb|AAA19947.1| neu differentiation factor
 Length = 662

Score = 72.7 bits (164), Expect = 5e-13
 Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 KCPNEFTGDRQCQNYVMASFY 20
 KCPNEFTGDRQCQNYVMASFY
 Sbjct: 211 KCPNEFTGDRQCQNYVMASFY 230

>gi|7669516|ref|NP_039252.1| neuregulin 1 isoform HRG-beta3; heregulin, alpha (4
 p185-activator); glial growth factor; neu
 differentiation factor; sensory and motor neuron derived
 factor [Homo sapiens]
gi|183999|gb|AAA58641.1| heregulin-beta3
 Length = 241

Score = 72.7 bits (164), Expect = 5e-13
 Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 KCPNEFTGDRQCQNYVMASFY 20
 KCPNEFTGDRQCQNYVMASFY
 Sbjct: 211 KCPNEFTGDRQCQNYVMASFY 230

>gi|483138|pir|C43273 heregulin precursor, splice form beta-2 - human
 Length = 637

Score = 72.7 bits (164), Expect = 5e-13
 Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 KCPNEFTGDRQCQNYVMASFY 20
 KCPNEFTGDRQCQNYVMASFY
 Sbjct: 211 KCPNEFTGDRQCQNYVMASFY 230

>gi|408391|gb|AAA19945.1| neu differentiation factor
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Score = 72.7 bits (164), Expect = 5e-13
 Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 KCPNEFTGDRQCQNYVMASFY 20
 KCPNEFTGDRQCQNYVMASFY
 Sbjct: 211 KCPNEFTGDRQCQNYVMASFY 230

>gi|22004072|tpg|DAA00041.1| TPA: neuregulin 1 isoform HRG-beta1 [Homo sapiens]
 Length = 645

Score = 72.7 bits (164), Expect = 5e-13
 Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 KCPNEFTGDRQCQNYVMASFY 20
 KCPNEFTGDRQCQNYVMASFY
 Sbjct: 211 KCPNEFTGDRQCQNYVMASFY 230

>gi|349729|gb|AAA72403.1| heregulin beta-1
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Score = 72.7 bits (164), Expect = 5e-13
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 KCPNEFTGDRQCQNYVMASFY 20
KCPNEFTGDRQCQNYVMASFY
Sbjct: 35 KCPNEFTGDRQCQNYVMASFY 54

>gi|7669522|ref|NP_039255.1| neuregulin 1 isoform GGF; heregulin, alpha (45kD, I
p185-activator); glial growth factor; neu
differentiation factor; sensory and motor neuron derived
factor [Homo sapiens]
gi|483200|pir|D43273 heregulin precursor, splice form beta-3 - human
gi|292050|gb|AAB59358.1| recombinant glial growth factor
gi|22004074|tpg|DAA00043.1| TPA: neuregulin 1 isoform HRG-beta3 [Homo sapiens]
gi|22004077|tpg|DAA00046.1| TPA: neuregulin 1 isoform GGF [Homo sapiens]
gi|445842|prf|1910316B glial growth factor
Length = 241

Score = 72.7 bits (164), Expect = 5e-13
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 KCPNEFTGDRQCQNYVMASFY 20
KCPNEFTGDRQCQNYVMASFY
Sbjct: 211 KCPNEFTGDRQCQNYVMASFY 230

>gi|30584177|gb|AAP36337.1| Homo sapiens neuregulin 1 [synthetic construct]
Length = 297

Score = 72.7 bits (164), Expect = 5e-13
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 KCPNEFTGDRQCQNYVMASFY 20
KCPNEFTGDRQCQNYVMASFY
Sbjct: 266 KCPNEFTGDRQCQNYVMASFY 285

>gi|408409|gb|AAA19954.1| neu differentiation factor
Length = 288

Score = 72.7 bits (164), Expect = 5e-13
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 KCPNEFTGDRQCQNYVMASFY 20
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Sbjct: 93 KCPNEFTGDRQCQNYVMASFY 112

>gi|11066044|gb|AAG28430.1|AF194441.1 SMDF neuregulin beta 2 [Rattus norvegicus]
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Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 KCPNEFTGDRQCQNYVMASFY 20
KCPNEFTGDRQCQNYVMASFY
Sbjct: 87 KCPNEFTGDRQCQNYVMASFY 106

>gi|7459696|pir|I38408 neu differentiation factor - human (fragment)
gi|408411|gb|AAA19955.1| neu differentiation factor

Length = 175

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Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 KCPNEFTGDRQCQNYVMASFY 20
KCPNEFTGDRQCQNYVMASFY
Sbjct: 145 KCPNEFTGDRQCQNYVMASFY 164

☐ >[gi|13928798|ref|NP_113776.1|](#) neuregulin 1 [Rattus norvegicus]
[gi|7459671|pir|I61718](#) neu differentiation factor - rat
[gi|408387|gb|AAA19943.1|](#) neu differentiation factor
Length = 636

Score = 72.7 bits (164), Expect = 5e-13
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 KCPNEFTGDRQCQNYVMASFY 20
KCPNEFTGDRQCQNYVMASFY
Sbjct: 211 KCPNEFTGDRQCQNYVMASFY 230

☐ >[gi|28483768|ref|XP_134101.2|](#) RIKEN cDNA D230005F13 gene [Mus musculus]
Length = 296

Score = 72.7 bits (164), Expect = 5e-13
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 KCPNEFTGDRQCQNYVMASFY 20
KCPNEFTGDRQCQNYVMASFY
Sbjct: 266 KCPNEFTGDRQCQNYVMASFY 285

☐ >[gi|7669512|ref|NP_039250.1|](#) neuregulin 1 isoform HRG-beta1; heregulin, alpha (4
p185-activator); glial growth factor; neu
differentiation factor; sensory and motor neuron derived
factor [Homo sapiens]
[gi|183995|gb|AAA58639.1|](#) heregulin-beta1
Length = 645

Score = 72.7 bits (164), Expect = 5e-13
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 KCPNEFTGDRQCQNYVMASFY 20
KCPNEFTGDRQCQNYVMASFY
Sbjct: 211 KCPNEFTGDRQCQNYVMASFY 230

☐ >[gi|408393|gb|AAA19946.1|](#) neu differentiation factor
Length = 636

Score = 72.7 bits (164), Expect = 5e-13
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 KCPNEFTGDRQCQNYVMASFY 20
KCPNEFTGDRQCQNYVMASFY
Sbjct: 211 KCPNEFTGDRQCQNYVMASFY 230

☐ >[gi|11066046|gb|AAG28431.1|AF194442.1](#) SMDF neuregulin beta 4 [Rattus norvegicus]
Length = 136

Score = 72.7 bits (164), Expect = 5e-13
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 KCPNEFTGDRQCQNYVMASFY 20

KCPNEFTGDRCONYVMASFY
Sbjct: 87 KCPNEFTGDRCONYVMASFY 106

>gi|22004073|tpg|DAA00042.1| TPA: neuregulin 1 isoform HRG-beta2 [Homo sapiens]
Length = 637

Score = 72.7 bits (164), Expect = 5e-13
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 KCPNEFTGDRCONYVMASFY 20
KCPNEFTGDRCONYVMASFY
Sbjct: 211 KCPNEFTGDRCONYVMASFY 230

>gi|2961137|gb|AAC05671.1| neuregulin beta-2a [Gallus gallus]
Length = 677

Score = 69.8 bits (157), Expect = 4e-12
Identities = 19/19 (100%), Positives = 19/19 (100%)

Query: 2 CPNEFTGDRCONYVMASFY 20
CPNEFTGDRCONYVMASFY
Sbjct: 254 CPNEFTGDRCONYVMASFY 272

>gi|9297019|sp|Q05199|NRG1 CHICK Pro-neuregulin-1 precursor (Pro-NRG1) [Contains:
(Acetylcholine receptor inducing activity) (ARIA)]
gi|1079381|pir|A45769 acetylcholine receptor synthesis stimulator ARIA-1 precursor
chicken
gi|212604|gb|AAA49037.1| aria
Length = 602

Score = 69.8 bits (157), Expect = 4e-12
Identities = 19/19 (100%), Positives = 19/19 (100%)

Query: 2 CPNEFTGDRCONYVMASFY 20
CPNEFTGDRCONYVMASFY
Sbjct: 171 CPNEFTGDRCONYVMASFY 189

>gi|2961139|gb|AAC05672.1| neuregulin beta-2b [Gallus gallus]
Length = 480

Score = 69.8 bits (157), Expect = 4e-12
Identities = 19/19 (100%), Positives = 19/19 (100%)

Query: 2 CPNEFTGDRCONYVMASFY 20
CPNEFTGDRCONYVMASFY
Sbjct: 254 CPNEFTGDRCONYVMASFY 272

>gi|2961135|gb|AAC05670.1| neuregulin beta-1a [Gallus gallus]
Length = 685

Score = 69.8 bits (157), Expect = 4e-12
Identities = 19/19 (100%), Positives = 19/19 (100%)

Query: 2 CPNEFTGDRCONYVMASFY 20
CPNEFTGDRCONYVMASFY
Sbjct: 254 CPNEFTGDRCONYVMASFY 272

>gi|2589172|gb|AAB83956.1| mucin Muc3 [Rattus norvegicus]
Length = 379

Score = 36.7 bits (79), Expect = 0.036
Identities = 10/12 (83%), Positives = 11/12 (91%)

Query: 2 CPNEFTGDRCQN 13
 CPN F+GDRCQN
 Sbjct: 13 CPNGFSGDRCQN 24

>gi|111979|pir|A39321 mucin - rat (fragment)
gi|205546|gb|AAA41642.1| mucin
 Length = 447

Score = 36.7 bits (79), Expect = 0.036
 Identities = 10/12 (83%), Positives = 11/12 (91%)

Query: 2 CPNEFTGDRCQN 13
 CPN F+GDRCQN
 Sbjct: 369 CPNGFSGDRCQN 380

>gi|9789757|sp|P56974|NRG2_MOUSE Pro-neuregulin-2 precursor (Pro-NRG2) [Contains:
 (NRG-2) (Divergent of neuregulin 1) (DON-1)]
 Length = 756

Score = 35.8 bits (77), Expect = 0.065
 Identities = 11/19 (57%), Positives = 14/19 (73%)

Query: 1 KCPNEFTGDRCQNYVMASF 19
 KCP +TGDRQC + M +F
 Sbjct: 279 KCPVGYTGDRQCQFAMVNF 297

>gi|7669532|ref|NP_053586.1| neuregulin 2 isoform 4; neural- and thymus-derived
 ErbB kinases [Homo sapiens]
gi|6840976|gb|AAF28851.1| neuregulin 2 isoform 4 [Homo sapiens]
 Length = 852

Score = 35.8 bits (77), Expect = 0.065
 Identities = 11/19 (57%), Positives = 14/19 (73%)

Query: 1 KCPNEFTGDRCQNYVMASF 19
 KCP +TGDRQC + M +F
 Sbjct: 371 KCPVGYTGDRQCQFAMVNF 389

>gi|7669528|ref|NP_053584.1| neuregulin 2 isoform 2; neural- and thymus-derived
 ErbB kinases [Homo sapiens]
gi|6840974|gb|AAF28849.1| neuregulin 2 isoform 2 [Homo sapiens]
 Length = 844

Score = 35.8 bits (77), Expect = 0.065
 Identities = 11/19 (57%), Positives = 14/19 (73%)

Query: 1 KCPNEFTGDRCQNYVMASF 19
 KCP +TGDRQC + M +F
 Sbjct: 371 KCPVGYTGDRQCQFAMVNF 389

>gi|7459670|pir|PC4415 ErbB kinase activator beta, brain and thymus - rat (fragm
gi|2605634|dbj|BAA23346.1| NTAK beta [Rattus sp.]
 Length = 57

Score = 35.8 bits (77), Expect = 0.065
 Identities = 11/19 (57%), Positives = 14/19 (73%)

Query: 1 KCPNEFTGDRCQNYVMASF 19
 KCP +TGDRQC + M +F
 Sbjct: 15 KCPVGYTGDRQCQFAMVNF 33

>gi|29373063|gb|AAO72523.1| neuregulin 2-beta; NRG2-beta [Mus musculus]

Length = 54

Score = 35.8 bits (77), Expect = 0.065
Identities = 11/19 (57%), Positives = 14/19 (73%)

Query: 1 KCPNEFTGDRCQNYVMASF 19
KCP +TGDRQC + M +F
Sbjct: 28 KCPVGYTGDRCCQFAMVNF 46

☐ >gi|9055270|ref|NP_061027.1| low density lipoprotein-related protein 1B (deleted)
density lipoprotein receptor related protein-deleted in
tumor [Homo sapiens]
gi|7861733|gb|AAF70379.1|AF176832.1 low density lipoprotein receptor related prot
[Homo sapiens]
Length = 4599

Score = 33.3 bits (71), Expect = 0.38
Identities = 10/14 (71%), Positives = 11/14 (78%)

Query: 2 CPNEFTGDRCQNYV 15
C E+TGDRCC YV
Sbjct: 4311 CQPEYTGDRCCYYV 4324

☐ >gi|17298318|gb|AAL38110.1| candidate tumor suppressor protein [Homo sapiens]
Length = 172

Score = 33.3 bits (71), Expect = 0.38
Identities = 10/14 (71%), Positives = 11/14 (78%)

Query: 2 CPNEFTGDRCQNYV 15
C E+TGDRCC YV
Sbjct: 42 CQPEYTGDRCCYYV 55

☐ >gi|7459690|pir||T09059 notch4 - mouse
gi|2564947|gb|AAB82004.1| notch4 [Mus musculus]
Length = 1964

Score = 32.9 bits (70), Expect = 0.51
Identities = 9/11 (81%), Positives = 10/11 (90%)

Query: 2 CPNEFTGDRCQ 12
CP+ FTGDRCQ
Sbjct: 102 CPSGFTGDRCQ 112

Score = 19.3 bits (38), Expect = 6216
Identities = 5/7 (71%), Positives = 6/7 (85%)

Query: 6 FTGDRCQ 12
FTG RC+
Sbjct: 540 FTGARCE 546

Database: All non-redundant GenBank CDS
translations+PDB+SwissProt+PIR+PRF

Posted date: May 29, 2003 2:04 AM

Number of letters in database: 462,300,935

Number of sequences in database: 1,438,044

Lambda K H

0.343 0.280 1.98

Gapped

Lambda	K	H
0.294	0.110	0.610

Matrix: PAM30

Gap Penalties: Existence: 9, Extension: 1

Number of Hits to DB: 24,918,002

Number of Sequences: 1438044

Number of extensions: 488106

Number of successful extensions: 7877

Number of sequences better than 20000.0: 100

Number of HSP's better than 20000.0 without gapping: 7521

Number of HSP's successfully gapped in prelim test: 0

Number of HSP's that attempted gapping in prelim test: 0

Number of HSP's gapped (non-prelim): 7871

length of query: 20

length of database: 462,300,935

effective HSP length: 11

effective length of query: 9

effective length of database: 446,482,451

effective search space: 4018342059

effective search space used: 4018342059

T: 11

A: 40

X1: 15 (7.4 bits)

X2: 35 (14.8 bits)

X3: 58 (24.6 bits)

S1: 35 (19.1 bits)

S2: 35 (18.0 bits)



PubMed	Nucleotide	Protein	Genome	Structure	PMC	Taxonomy	OMIM	Books
Search <input type="text" value="Protein"/> for <input type="text"/>							<input type="button" value="Go"/>	<input type="button" value="Clear"/>
Limits		Preview/Index		History		Clipboard		Details
Display	<input type="text" value="default"/>	Show:	<input type="text" value="20"/>	Send to	<input type="text" value="File"/>	Get Subsequence		

1: NP_039253. neuregulin 1 isof...[gi:7669518]

[BLink](#), [Links](#)

LOCUS NRG1 296 aa linear PRI 06-APR-2003

DEFINITION neuregulin 1 isoform SMDF; heregulin, alpha (45kD, ERBB2 p185-activator); glial growth factor; neu differentiation factor; sensory and motor neuron derived factor [Homo sapiens].

ACCESSION NP_039253

VERSION NP_039253.1 GI:7669518

DBSOURCE REFSEQ: accession [NM_013959.1](#)

KEYWORDS .

SOURCE Homo sapiens (human)

ORGANISM [Homo sapiens](#)
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.

REFERENCE 1 (residues 1 to 296)

AUTHORS Chaudhury,A.R., Gerecke,K.M., Wyss,J.M., Morgan,D.G., Gordon,M.N. and Carroll,S.L.

TITLE Neuregulin-1 and erbB4 immunoreactivity is associated with neuritic plaques in Alzheimer disease brain and in a transgenic model of Alzheimer disease

JOURNAL J. Neuropathol. Exp. Neurol. 62 (1), 42-54 (2003)

MEDLINE [22416151](#)

PUBMED [12528817](#)

REMARK GeneRIF: Synaptic loss, gliosis, inflammation, and neuronal death occurring in Alzheimer disease is associated with altered expression of NRG-1 and its receptors (the erbB membrane tyrosine kinases).

REFERENCE 2 (residues 1 to 296)

AUTHORS Miralem,T. and Avraham,H.K.

TITLE Extracellular matrix enhances heregulin-dependent BRCA1 phosphorylation and suppresses BRCA1 expression through its C terminus

JOURNAL Mol. Cell. Biol. 23 (2), 579-593 (2003)

MEDLINE [22397817](#)

PUBMED [12509456](#)

REMARK GeneRIF: heregulin downregulates BRCA1 in the extracellular matrix of breast cancer cells

REFERENCE 3 (residues 1 to 296)

AUTHORS Stefansson,H., Sarginson,J., Kong,A., Yates,P., Steinhorsdottir,V., Gudfinnsson,E., Gunnarsdottir,S., Walker,N., Petursson,H., Crombie,C., Ingason,A., Gulcher,J.R., Stefansson,K. and St Clair,D.

TITLE Association of neuregulin 1 with schizophrenia confirmed in a Scottish population

JOURNAL Am. J. Hum. Genet. 72 (1), 83-87 (2003)

MEDLINE [22375654](#)

PUBMED [12478479](#)

REMARK GeneRIF: Association of neuregulin 1 with schizophrenia confirmed in a Scottish population

REFERENCE 4 (residues 1 to 296)

AUTHORS Stefansson,H., Sigurdsson,E., Steinhorsdottir,V., Bjornsdottir,S., Sigmundsson,T., Ghosh,S., Brynjolfsson,J., Gunnarsdottir,S., Ivarsson,O., Chou,T.T., Hjaltason,O., Birgisdottir,B., Jonsson,H.,

Gudnadottir,V.G., Gudmundsdottir,E., Bjornsson,A., Ingvarsson,B., Ingason,A., Sigfusson,S., Hardardottir,H., Harvey,R.P., Lai,D., Zhou,M., Brunner,D., Mutel,V., Gonzalo,A., Lemke,G., Sainz,J., Johannesson,G., Andresson,T., Gudbjartsson,D., Manolescu,A., Frigge,M.L., Gurney,M.E., Kong,A., Gulcher,J.R., Petursson,H. and Stefansson,K.

- TITLE Neuregulin 1 and susceptibility to schizophrenia
JOURNAL Am. J. Hum. Genet. 71 (4), 877-892 (2002)
MEDLINE 22233215
PUBMED 12145742
REMARK GenerIF: the behavioral phenotypes of the NRG1 hypomorphs are partially reversible with clozapine, an atypical antipsychotic drug used to treat schizophrenia.
- REFERENCE 5 (residues 1 to 296)
AUTHORS Liu,J. and Kern,J.A.
TITLE Neuregulin-1 activates the JAK-STAT pathway and regulates lung epithelial cell proliferation
JOURNAL Am. J. Respir. Cell Mol. Biol. 27 (3), 306-313 (2002)
MEDLINE 22193434
PUBMED 12204892
REMARK GenerIF: NRG-1 activates the JAK-STAT signal transduction pathway through its high-affinity receptor, the HER2/HER3 heterodimer. This pathway plays an important role in NRG-1-stimulated proliferation of pulmonary epithelial cells.
- REFERENCE 6 (residues 1 to 296)
AUTHORS Talukder,A.H., Wang,R.A. and Kumar,R.
TITLE Expression and transactivating functions of the bZIP transcription factor GADD153 in mammary epithelial cells
JOURNAL Oncogene 21 (27), 4289-4300 (2002)
MEDLINE 22077736
PUBMED 12082616
REMARK GenerIF: HRG stimulation of mammary epithelial cells induces the expression of GADD153 mRNA and protein and transcription of GADD153 promoter.
- REFERENCE 7 (residues 1 to 296)
AUTHORS Cabedo,H., Luna,C., Fernandez,A.M., Gallar,J. and Ferrer-Montiel,A.
TITLE Molecular determinants of the sensory and motor neuron-derived factor insertion into plasma membrane
JOURNAL J. Biol. Chem. 277 (22), 19905-19912 (2002)
MEDLINE 22028052
PUBMED 11896060
REMARK GenerIF: Molecular determinants of the sensory and motor neuron-derived factor insertion into plasma membrane
- REFERENCE 8 (residues 1 to 296)
AUTHORS Landgraf,R., Fischer,D. and Eisenberg,D.
TITLE Analysis of heregulin symmetry by weighted evolutionary tracing
JOURNAL Protein Eng. 12 (11), 943-951 (1999)
MEDLINE 20054766
PUBMED 10585499
- REFERENCE 9 (residues 1 to 296)
AUTHORS Meyer,D., Yamaai,T., Garratt,A., Riethmacher-Sonnenberg,E., Kane,D., Theill,L.E. and Birchmeier,C.
TITLE Isoform-specific expression and function of neuregulin
JOURNAL Development 124 (18), 3575-3586 (1997)
MEDLINE 98000097
PUBMED 9342050
- REFERENCE 10 (residues 1 to 296)
AUTHORS Schaefer,G., Fitzpatrick,V.D. and Sliwkowski,M.X.
TITLE Gamma-heregulin: a novel heregulin isoform that is an autocrine growth factor for the human breast cancer cell line, MDA-MB-175
JOURNAL Oncogene 15 (12), 1385-1394 (1997)
MEDLINE 97472144
PUBMED 9333014
- REFERENCE 11 (residues 1 to 296)
AUTHORS Ho,W.H., Armanini,M.P., Nuijens,A., Phillips,H.S. and Osherooff,P.L.

TITLE Sensory and motor neuron-derived factor. A novel heregulin variant highly expressed in sensory and motor neurons
 JOURNAL J. Biol. Chem. 270 (24), 14523-14532 (1995)
 MEDLINE 95301541
 PUBMED 7782315
 REFERENCE 12 (residues 1 to 296)
 AUTHORS Wen,D., Suggs,S.V., Karunakaran,D., Liu,N., Cupples,R.L., Luo,Y., Janssen,A.M., Ben-Baruch,N., Trollinger,D.B., Jacobsen,V.L. et al.
 TITLE Structural and functional aspects of the multiplicity of Neu differentiation factors
 JOURNAL Mol. Cell. Biol. 14 (3), 1909-1919 (1994)
 MEDLINE 94158863
 PUBMED 7509448
 REFERENCE 13 (residues 1 to 296)
 AUTHORS Lee,J. and Wood,W.I.
 TITLE Assignment of heregulin (HGL) to human chromosome 8p22-p11 by PCR analysis of somatic cell hybrid DNA
 JOURNAL Genomics 16 (3), 790-791 (1993)
 MEDLINE 93315185
 PUBMED 8325659
 REFERENCE 14 (residues 1 to 296)
 AUTHORS Marchionni,M.A., Goodearl,A.D., Chen,M.S., Bermingham-McDonogh,O., Kirk,C., Hendricks,M., Danehy,F., Misumi,D., Sudhalter,J., Kobayashi,K. et al.
 TITLE Glial growth factors are alternatively spliced erbB2 ligands expressed in the nervous system
 JOURNAL Nature 362 (6418), 312-318 (1993)
 MEDLINE 93205115
 PUBMED 8096067
 REFERENCE 15 (residues 1 to 296)
 AUTHORS Orr-Urtreger,A., Trakhtenbrot,L., Ben-Levy,R., Wen,D., Rechavi,G., Lonai,P. and Yarden,Y.
 TITLE Neural expression and chromosomal mapping of Neu differentiation factor to 8p12-p21
 JOURNAL Proc. Natl. Acad. Sci. U.S.A. 90 (5), 1867-1871 (1993)
 MEDLINE 93189598
 PUBMED 8095334
 REFERENCE 16 (residues 1 to 296)
 AUTHORS Lupu,R. and Lippman,M.E.
 TITLE William L. McGuire Memorial Symposium. The role of erbB2 signal transduction pathways in human breast cancer
 JOURNAL Breast Cancer Res. Treat. 27 (1-2), 83-93 (1993)
 MEDLINE 94083684
 PUBMED 7903175
 REFERENCE 17 (residues 1 to 296)
 AUTHORS Holmes,W.E., Sliwkowski,M.X., Akita,R.W., Henzel,W.J., Lee,J., Park,J.W., Yansura,D., Abadi,N., Raab,H., Lewis,G.D. et al.
 TITLE Identification of heregulin, a specific activator of p185erbB2
 JOURNAL Science 256 (5060), 1205-1210 (1992)
 MEDLINE 92271253
 PUBMED 1350381
 COMMENT REVIEWED REFSEQ: This record has been curated by NCBI staff. The reference sequence was derived from L41827.1.

Summary: Neuregulin 1 (NRG1) was originally identified as a 44-kD glycoprotein that interacts with the NEU/ERBB2 receptor tyrosine kinase to increase its phosphorylation on tyrosine residues. It is known that an extraordinary variety of different isoforms are produced from the NRG1 gene by alternative splicing. These isoforms include heregulins (HRGs), glial growth factors (GGFs) and sensory and motor neuron-derived factor (SMDF). They are tissue-specifically expressed and differ significantly in their structure. The HRG isoforms all contain immunoglobulin (Ig) and epidermal growth factor-like (EGF-like) domains. GGF and GGF2 isoforms contain a kringle-like sequence plus Ig and EGF-like

domains; and the SMDF isoform shares only the EGF-like domain with other isoforms. The receptors for all NRG1 isoforms are the ERBB family of tyrosine kinase transmembrane receptors. Through interaction with ERBB receptors, NRG1 isoforms induce the growth and differentiation of epithelial, neuronal, glial, and other types of cells.

Transcript Variant: This variant (SMDF) is expressed mainly in the nervous system. It contains a C-terminal EGF-like domain and a unique N-terminal sequence which lacks an Ig-like domain and is distinct from all known HRG-variants.

FEATURES
 source Location/Qualifiers
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 /chromosome="8"
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 Protein 1..296
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 /note="heregulin, alpha (45kD, ERBB2 p185-activator);
 glial growth factor; neu differentiation factor; sensory
 and motor neuron derived factor"
 variation 46
 /allele="R"
 /allele="G"
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 /region_name="EGF-like domain"
 CDS 1..296
 /gene="NRG1"
 /coded_by="NM_013959.1:501..1391"
 /db_xref="LocusID:3084"
 /db_xref="MIM:142445"

ORIGIN

1 meiysspdmse vaaersssps tqlsadpsld glpaaedmpe pqtcdgrtpg lvglavpcca
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 121 piislataaa savwsseay tspvsraqse sevqvtvqgd kavvsfepa aptpknrifa
 181 fsflpstaps fpsptrnpev rtpksatqpq ttetnlqtap klstststtg tshlvkcaek
 241 ektfcvngge cfmvkdlnp srylckcpne ftgdrcqnyv masfyststp flslpe

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